CHAPTER 9

PROGRAMMABLE COMMUNICATING THERMOSTATS (PCT)

ED QUIROZ

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I. INTRODUCTION AND SUMMARY

San Diego Gas and Electric (SDG&E) is proposing to deploy an AMI system that includes integrating programmable communicating thermostats (PCT) as part of its strategy.

SDG&E has proposed to deploy PCT devices between 2009 thru 2013 at approximately 16,000 small and medium commercial and industrial (C+I) customer premises. These customers are assumed to have a peak demand of 200kw or less.

II. PROGRAMMABLE COMMUNICATING THERMOSTATS

As part of SDG&E's July 14th, 2006 supplemental filing, the company is now identifying programmable communicating thermostats (PCTs) as part of its business case for AMI. The PCTs are expected to be deployed between 2009 thru 2013 at approximately 16,000 small and medium commercial and industrial (C+I) customer premises. These customers are assumed to have a peak demand of 200 kW or less. Because these premises typically have multiple PCTs per location, the actual PCT total may be closer to approximately 57,000.

The California Energy Commission is in the process of updating its Title 24 standards to include PCTs in the 2008 revision. SDG&E assumes that the deployed communication network that becomes part of the AMI system can also be used for the PCT communication, rather than propose a specific independent technical solution.

DRA feels that any discussion of demand response (DR) must take seriously the potential to automate customer response to price signals. The potential impact of

PCT on demand response is clear when reading the 2005 Statewide Pricing Pilot (SPP) Report[1]. Though this report was primarily concerned with estimating the price elasticity of electricity, with secondary analysis of customer preferences, the report contains many illustrations of the PCT as a powerful DR tool. For example, the SPP report measured a peak period load reduction of 27% for one test population in SDG&E's territory and attributed 2/3 of that group's savings to PCT systems[2]. In fact, the load reduction achieved by the PCT equipped peak test population in SDG&E's territory was the largest measured by the SPP Report.

Partially explaining the importance of PCTs is the correlation between air conditioning use and peak energy consumption. California's peak energy use days correspond to the hottest days of the year. This is because of the fact that on the hottest days of the year, Californians run their air conditioners longer than during the rest of the year to cool their homes and businesses. This air conditioning load exhibits higher demand elasticity than base uses such as lighting; this can be seen by examining the demand elasticities of customers in cooler and warmer climate zones[3]. Affording customers access to tools that control that portion of their load, which they would preferentially shed, should be a high priority – particularly when the PCT controls the single largest category of electrical load during peak periods.

DRA understands that open PCT standards, as currently proposed to be added to Title 24 standards will allow residential ratepayers to independently purchase and install PCT devices in their homes. The PCT devices that residential ratepayers will be able to buy in hardware stores will be instrumental in their achieving significant financial savings under any time-differentiated tariff. Furthermore, ratepayer access to an open-standard, competitively priced, automated thermostat (PCT) potentially reduces the challenging and cumbersome process currently associated with

[1] Charles River Associates., Impact Evaluation of the California Statewide Pricing Pilot (SPP), 3/16/2005.

[2] SPP, pg. 9

[3] SPP, Pg. 6 Figure 1-1

participating in a CPP or RTP pricing tariff. Future proceedings can measure the wisdom of subsidizing the purchase and installation of PCT in customer homes, but the communications network and customer education of this communications function is an essential part of any CPP or RTP pricing tariff plan.

III. RISK MITIGATION

SDG&E provided a table, PP11-1 that provides cost information. A line item for the total PCTs O&M shows an amount of $24,857,000 projected over what appears to be a 30 year period through 2038. Very little support documentation is given to explain the toal amount or how it is allocated during the time period. Additionally, SDG&E projects a $75/PCT installation cost and an additional $25/PCT cost for each additional PCT installed at the same site. While this number is derived from experience gained from a previous SDG&E Smart Thermostat Program, no mention is made as to potential cost reductions that might be had as PCT scale-up occurs.

IV. CONCLUSIONS

SDG&E has provided a description, as part of its July 14th supplemental filing, of approximately 16,000 PCTs that will be part of the project. Much of the performance specifications for the PCT deployment is still unknown because of current development and evolving specifications as part of the California Energy Commission's (CEC) Title 24 2008 revision process. Nevertheless, DRA believes that the PCT deployment has the potential to attract an increased participation and greater customer DR response for those customers on dynamic tariffs.